

REMARKS

This application has been reviewed in light of the Office Action dated March 19, 2003. Claims 1, 3-8, 18-20, 22-27, 44, 45, 52, 53, 71-73 and 95-98 are presented for examination. Claims 2, 9-17, 21, 28-43, 46-51, 54-70 and 74-94 have been cancelled, without prejudice or disclaimer of subject matter. Claims 1, 3-8, 18-20, 22-27, 44, 45, 52, 53, and 71-73 have been amended to define more clearly what Applicants regard as their invention. New Claims 95-98 have been added to provide Applicants with a more complete scope of protection. Claims 1, 7, 20, and 26 are in independent form. Favorable reconsideration is requested.

Claims 1-94 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Without conceding the propriety of the Section 112 rejection, cancellation of Claims 2, 9-17, 21, 28-43, 46-51, 54-70 and 74-94 renders their rejection under Section 112 moot.

Also, the words "distribution" and "thickness" have been removed from the remaining claims, thereby rendering the issues with respect to those words moot.

While the words "given" and "giving" have been removed from some of the claims, the use of those words in the claims is believed appropriate to indicate "applied" or "provided" (given), or "applying" or "providing" (giving), respectively, as one skilled in the art would clearly appreciate in view of Applicants' patent application. Moreover,

Applicants may be their own lexicographers according to USPTO rules, and thus may employ “given” or “giving” in the claims to define their invention.

In view of the foregoing, it is believed that the Section 112 rejection has been overcome, and its withdrawal is therefore respectfully requested.

Claims 1-94 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either JP 10-58668, JP 11-25852, U.S. Patent 6,060,113 (Banno et al.), or EP 736890, in combination with JP 10-5654 or JP 06-163449.

Cancellation of Claims 2, 9-17, 21, 28-43, 46-51, 54-70 and 74-94 renders their rejection under Section 103(a) moot.

Claim 1 is directed to a method of manufacturing an electronic device. The method comprises the steps of moving a droplet ejecting portion of an ink jet device and a substrate to which a droplet is to be ejected relatively in an in-surface direction of the substrate, and detecting a distance between the ejecting portion and a droplet given surface on the substrate. The method also comprises the step of ejecting to a plurality of portions separated mutually on the substrate at plural times intermittently the droplet of a liquid containing material for forming the electronic device upon the moving under a control of the distance based on a detection result.

An object of the present invention is to correct a position on a substrate to which a liquid droplet is given by ink jet liquid ejection. It is desired to correct the position since the position can be undesirably shifted according to a change in a distance between the substrate and the droplet ejecting position during a plurality of intermittent liquid

ejections, owing to an uneven thickness of the substrate (inherent to the substrate), distortion of the substrate formed during manufacturing, poor flatness of the stage on which the substrate is disposed during manufacturing, and an imperfect parallel relationship between the substrate and the droplet ejecting position during the relative movement. The method of Claim 1 enables the position to be corrected. None of the prior art references relied on by the Examiner recognizes a need to achieve the above-identified object of the present invention.

JP10-58668 discloses an ink-jet printer and a method for image printing, but does not disclose or suggest a method of manufacturing an electronic device, an electron source and an image forming apparatus by an ink jet device, as in the present invention.

Banno et al. relates to a method of producing an electron-emitting device including steps of forming electrodes and an electrically-conductive thin film on a substrate in such a manner that the electrodes are in contact with the thin film, and forming an electron emission region using the thin film. A solution containing a metal element is supplied in a droplet form, such as by an inkjet system, onto the substrate thereby forming the electrically-conductive thin film.

Banno et al., JP11-25852, and EP739890 disclose methods of manufacturing an electron source, an image forming apparatus, and an electronic device by the ink jet device. The Office Action concedes that JP10-58668, Banno et al., JP11-25852, and EP739890 do not teach or suggest "measuring/controlling the distance(height) from the droplet nozzle to the surface to be coated." Indeed, nothing in those references or in

would teach or suggest "detecting a distance between said ejecting portion and a droplet given surface on said substrate", and "ejecting to a plurality of portions separated mutually on the substrate at plural times intermittently the droplet of a liquid containing material for forming the electronic device upon the moving under a control of the distance based on a detection result", as recited in Claim 1.

JP10-5654 is cited in the Office Action as teaching "a coating machine for applying paste to a substrate with a nozzle where the angularity/height of the nozzle from the coating surface is measured and controlled", but does not disclose or suggest a manufacturing method using the ink jet device as in the present invention. JP10-5654 refers to a paste painting device that is employed merely to paint continuously paste on a substrate, but is not seen to teach or suggest a manufacturing method using an ink jet device to eject a liquid droplet intermittently at plural times to a substrate to apply a plurality of portions separated mutually on the substrate, as recited in Claim 1. JP10-5654 is merely intended to make uniform the thickness of the painted paste.

JP06-163499 discloses a method for ejecting a resist, a solvent, and water from nozzle to the substrate, and is cited in the Office Action as teaching "controlling the distance from the nozzle to the substrate to maintain a constant distance between the nozzle and surface to be coated." JP06-163499 intends to process a whole surface of the substrate uniformly by the liquid ejected from the nozzle, but nothing in that reference would disclose or suggest a manufacturing method using an ink jet device to eject a liquid droplet intermittently at a plurality of times to a substrate, in a manner as recited in Claim 1.

Indeed, nothing in either JP10-5654 or JP06-163499 would teach or suggest "detecting a distance between said ejecting portion and a droplet given surface on said substrate", and "ejecting to a plurality of portions separated mutually on the substrate at plural times intermittently the droplet of a liquid containing material for forming the electronic device upon the moving under a control of the distance based on a detection result", as recited in Claim 1.

Accordingly, even if any of JP 10-58668, JP 11-25852, U.S. Patent 6,060,113 (Banno et al.), or EP 736890, were to be combined with JP 10-5654 or JP 06-163449 in the manner proposed in the Office Action, the proposed combination still would not teach or suggest those features of Claim 1. Accordingly, Claim 1 is deemed clearly patentable over those references, whether considered separately or in the proposed combinations.

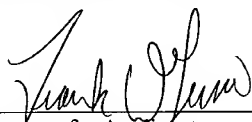
Independent Claims 7, 20, and 26 each recite features that are similar in many relevant respects to those of Claim 1 emphasized above, and also are believed clearly patentable over those references, for substantially the same reasons as is Claim 1.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Frank J. Harp", is written over a horizontal line.

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